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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/664,094	09/19/2000	Masayuki Mizuno	Q60884	5281

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EXAMINER
MONDT, JOHANNES P

ART UNIT	PAPER NUMBER
2826	

DATE MAILED: 05/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/664,094	MIZUNO, MASAYUKI	
	Examiner	Art Unit	
	Johannes P Mondt	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 March 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *15* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

The examiner has considered the items listed in the Information Disclosure Statement of Paper No. 15.

Response to Amendment

Amendment C filed 03/04/2003 and entered as Paper No. 16 forms the basis of this office action. In Amendment A, Applicant amended claims 1, 2 and 5 and thereby has overcome the rejections under 35 USC 112, first paragraph. In addition, the non-final art rejections based on Toyoda et al have been withdrawn in light of the certified translation showing that the holes in Toyoda are in the insulator, not in the signal line or ground plate. The following office action is thus a replacement of the non-final office action of Paper No. 13, the latter being withdrawn.

Response to Arguments

As mentioned above, the art rejections in Paper No. 13 are herewith withdrawn and replaced with new art rejections, because the Applicant's amendment of the claims was confined to what was needed to overcome the rejections under 35 USC 112, first paragraph. However, as a result of a better understanding of the invention emanating from said amendment an updated search has revealed new prior art herewith presented at the earliest possible time.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. ***Claim 9*** recites the limitation "those terminal ends" in the final line. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. ***Claim 1*** is rejected under 35 U.S.C. 103(a) as being unpatentable over Steensma (3,925,740). Steensma teaches a semiconductor integrated circuit comprising a microstrip structure (cf. title and abstract), comprising: a signal line 3/8 (cf. column 1, line 67 and column 2, line 9), and a ground plate 2 (cf. column 1, line 66), wherein at least one through hole 7 (cf. column 2, line 6) is formed in said signal line, and an inner wall of said through hole is only directly electrically connected to said signal line by virtue of the non-conductive nature of a hole (otherwise there would not be a hole but merely a change in the electrical conductivity).

2. ***Claim 2*** is rejected under 35 U.S.C. 102(b) as being anticipated by Pozar (5,793,263). Pozar teaches a microstrip structure comprising (Figures 2 and 3) a signal line 20 (cf. column 2, line 31); and a ground plate 18 (cf. column 2, lines 30-31), wherein at least one through hole is formed in said ground plate (cf. column 2, lines 51-52), and an inner wall of said through-hole is only directly electrically connected to said ground plate by virtue of the non-conductive nature of a hole (otherwise there would not be a hole but merely a change in the electrical conductivity).

3. ***Claims 1, 2, 5 and 8*** are rejected under 35 U.S.C. 102(b) as being anticipated by Davidovitz (5,539,361).

With regard to claim 1: Davidovitz teaches (Figure 2E; column 5, lines 8-20 and column 6, lines 29-33) a microstrip structure comprising: a signal line 15 (cf. column 5, line 1); and a ground plate 13 (cf. column 5, lines 10-11), wherein at least one through hole (to the right of 11-2 and larger in diameter) (cf. column 5, lines 8-13) is formed in said signal line 15 (cf. column 5, lines 8-13), and an inner wall of said signal line is only directly electrically connected to said signal line by virtue of being an "aperture" (cf. column 5, line 15), i.e., "open space".

With regard to claim 2: Davidovitz teaches (Figure 2E; column 5, lines 8-20 and column 6, lines 29-33) a microstrip structure comprising: a signal line 15 (cf. column 5, line 1); and a ground plate 13 (cf. column 5, lines 10-11), wherein at least one through hole 11-2 (cf. also Figure 1A) is formed in said ground plate (cf. column 5, lines 14-16),

and an inner wall of said through hole is only directly electrically connected to said ground plate by virtue of being an "aperture" (cf. column 5, line 15), i.e., "open space".

With regard to claims 1 and 5: Davidovitz teaches (Figure 2E; column 5, lines 8-20 and column 6, lines 29-33) a microstrip structure comprising: a signal line 15 (cf. column 5, line 1); and a ground plate 13 (cf. column 5, lines 10-11), wherein at least one through hole (to the right of 11-2 and larger in diameter) (cf. column 5, lines 8-13) is formed in said signal line 15 (cf. column 5, lines 8-13), and an inner wall of said signal line is only directly electrically connected to said signal line, and wherein at least one through hole 11-2 is formed in said ground plate (cf. column 5, lines 14-16), and an inner wall of said through hole 11-2 is only directly electrically connected to said ground plate by virtue of being an "aperture" (cf. column 5, line 15), i.e., "open space".

With regard to claim 8: Davidovitz teaches said hole in said ground plate to be smaller than the hole in said signal line so as to reduce the AC coupling with said signal line, said holes in ground plate and signal line being disposed at the same position along said signal line and ground plate (cf. column 5, lines 8-25). Therefore, the further limitation as defined by claim 8 does not distinguish over Davidovitz either.

4. ***Claims 1-2, 5 and 9*** are rejected under 35 U.S.C. 102(b) as being anticipated by Napoli (3,659,228).

With regard to claim 1: Napoli teaches (Figures 4 and 5) a microstrip structure comprising:

a signal line 33/35 (cf. column 2, lines 66-67);

a ground plate 32 (cf. column 2, lines 65-66), wherein at least one through hole 37 (cf. column 2, line 67) is formed in said signal line, and an inner wall of said through hole is only directly electrically connected to said signal line by virtue of being a void by dint of providing a spacing between said signal lines (cf. column 2, lines 6-8).

With regard to claim 2: Napoli teaches (Figures 4 and 5) a microstrip structure comprising:

a signal line 33/35 (cf. column 2, lines 66-67);

a ground plate 32 (cf. column 2, lines 65-66), wherein at least one through hole 38 (cf. column 2, line 74) is formed in said ground plate, and an inner wall of said through hole is only directly electrically connected to said signal line by virtue of being a void by dint of being an aperture (cf. column 2, line 74), i.e., an opening.

With regard to claim 5: Napoli teaches (Figures 4 and 5) a microstrip structure comprising:

a signal line 33/35 (cf. column 2, lines 66-67);

a ground plate 32 (cf. column 2, lines 65-66), wherein at least one through hole 37 (cf. column 2, line 67) is formed in said signal line, and an inner wall of said through hole is only directly electrically connected to said signal line by virtue of being a void by dint of providing a spacing between said signal lines (cf. column 2, lines 6-8); and wherein at least one through hole 38 (cf. column 2, line 74) is formed in said ground plate, and an inner wall of said through hole is only directly

electrically connected to said signal line by virtue of being a void by dint of being an aperture (cf. column 2, line 74), i.e., an opening.

With regard to claim 9: Napoli teaches furthermore within the context of claim 1 that the microstrip structure comprising said signal line and said ground plate has a plurality of slit holes 37 and 38 (cf. Figures 4 and 5) formed by forming said signal line or said ground plate of a plurality (for both signal line and ground plate: 2) thin strips and connecting these thin strips at terminal ends (that all parts of signal line and ground plate need to be connected to terminals in inherent in the use of microstrip structures).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. ***Claims 3-4 and 6-7*** are rejected under 35 U.S.C. 103(a) as being unpatentable over Davidovitz (5,539,361). As detailed above, Davidovitz anticipates claims 2 and 5, on which claims 3-4 and 6-7 respectively depend. Davidovitz does not necessarily specify the further limitation as defined by claims 3-4 or 6-7 in all detail.

However, with regard to claims 3 and 6, Davidovitz does state as one aspect of his invention that the "wave guide reducing guides electromagnetic energy by being tapered from a standard input opening to a narrower opening at the ground plane"

(=ground plate) (cf. column 3, lines 30-45), with "the taper configured to eliminate reflections from the ground plane". This statement logically implies that the size of at least one hole in said ground plate is determined to eliminate said reflections. The examiner takes official notice that it is understood by those of ordinary skills in the art from first principles that said reduction of reflections implies a reduction in the AC coupling between the signal line 15 and the wave guide 12 (cf. column 5, lines 60-65) and hence an increase in the impedance of the signal line.

With regard to claims 4 and 7, Davidovitz achieves his goal of reducing said reflections by determining one hole to be formed in said ground plate. Evidently, one hole suffices. The examiner takes official notice that it is understood in the art of electromagnetism that the addition of any other holes would decrease said AC coupling and increase said impedance further, given any particular size and possible distribution of locations of said holes.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Watanabe et al (5,852,391); Goodman et al (5,519,176) (patent family of IDS item 3 in Paper No. 15); and Lynch (6,509,809 B1) (cf. particularly discussion of Figure 6B).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johannes P Mondt whose telephone number is 703-306-0531. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 703-308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JPM
May 11, 2003